

Sent Via Facsimile Transmisslon 571.273.8300

18099 (AT 20958-60)
PATENT

Remarks

The Office Action mailed October 5, 2005 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-25 are now pending in this application, of which claims 1, 4 and 10-25 have been amended. It is respectfully submitted that the pending claims define allowable subject matter.

The specification has been amended as suggested by the Examiner, and the claims have been renumbered to correct the numbering of the claims in the application as filed wherein two claims with the number three were presented. The undersigned regrets any confusion or inconvenience that the claim numbering error may have caused on the part of the Office.

The objection to claims 4, 14, and 19 is respectfully traversed.

The Office Action states that "processable" is misspelled in claims 4 and 14, but Applicants note that the spelling was taken from and is identical to descriptions of the referenced rubber material found in marketing materials of Advanced Polymer Alloys, the owner of the ALCRYN trademark and associated material identified in paragraph [0027] of the present specification. Applicants therefore submit that alternative spellings of the word would be inappropriate and that the objection should be reconsidered and withdrawn.

Claim 19 has been amended to correct the spelling of the word "encapsulated".

Applicants accordingly request that the objection to claims 4, 14 and 19 be withdrawn.

The rejection of claims 1-3, 7, 8, 10-13, 15, 17, 19, 2 and 22-25 under 35 U.S.C. § 102(b) as being anticipated by Groenewegen (U.S. Patent No. 4,694,119) is respectfully traversed.

Sent Via Facsimile Transmission 571.273.8300

18099 (AT 20958-60)
PATENT

Groenewegen is cited in the Office Action for disclosing an electronic package (10) including a circuit board (24), a capsule layer (22) encasing the circuit board (24) and in intimate contact therewith, and a housing (12) forming a protective shell around an electronic module. Groenewegen actually describe, however, an aircraft flight data recorder wherein the element (22) is not a capsule layer in intimate contact with a circuit board, but rather is a metal shell that is filled with a meltable insulator (28) of synthetic wax to encapsulate printed circuit boards (24). The shell (22) is filled with a melted insulator material (28) to encapsulate the boards (24). *See* Groenewegen col. 4, lines 48-57 and col. 5, line 66 to col. 7, line 1. The insulator (28) then hardens, and in the event of an aircraft crash and fire, the insulator material (28) melts and initially functions as a heat shield to protect memory devices (36).

Claim 1 has been amended for clarity and now recites an electronic package comprising “a circuit board;” “a compressible capsule layer encasing said circuit board and in intimate contact therewith, thereby forming a sealed immersible electronic module;” and “a housing receiving an outer surface of and press fit to said encapsulated electronic module and forming a protective shell around said electronic module with press fit engagement.”

The Groenewegen device does not meet the recitations of claim 1. The synthetic wax (28) of Groenewegen that encapsulates the board (24) is not compressible, but rather fills the metal shell (22) after the circuit boards are placed therein, and the boards (24) and the wax (28) is supported by the shell (22). There is no reason for the wax material (28) to be compressible either, as Groenewegen discloses that the shell (22) is contained within an outer housing (12) of titanium that exhibits “relatively high resistance to crushing and penetration” in the event of an aircraft crash. *See* Groenewegen col. 3, line 63 to col. 4, line 2. When protected in such a manner, compressibility of the wax material would serve no purpose.

Sent Via Facsimile Transmission 571.273.8300

18099 (AT 20958-60)
PATENT

Additionally, the meltable insulator material (28) of Groenewegen, being applied to the metal shell (22) in a melted liquid form, does not engage the shell (22) with press fit insertion as claim 1 recites. Likewise, because the Groenewegen wax material is applied in liquid form, it has no identifiable outer surface that the metal shell (22) could receive to satisfy the recitations of claim 1. Further, the metal shell (22) does not protect the circuit boards (24), but rather the outer housing (12) and the insulator material (28) protects the memory devices (26) and the boards (24). The shell (22) is provided only to carry the boards (24) and the memory devices (26) and form a receptacle for the meltable insulator material (28).

Groenewegen is therefore submitted to neither describe nor suggest the electronic package of claim 1, and accordingly submit that claim 1 is patentable over Groenewegen.

Claims 2-3 and 7-8 depend from claim 1, and when the recitations of claims 2-3 and 7-8 are considered in combination with the recitations of claim 1, claims 2-3 and 7-8 are likewise submitted to be patentable over Groenewegen.

Claim 10 recites an electronic package comprising: "an electronic assembly overmolded with a capsule layer into a freestanding structure, said electronic assembly configured to output a signal in response to a condition of a monitored object;" "a housing having a bore therein configured to receive said overmolded electronic assembly via press fit insertion;" and "one of said capsule layer and said housing comprising a latch configured to engage the other of said capsule layer and said housing."

The Groenewegen circuit boards are not overmolded with a capsule layer into a freestanding structure. The meltable material (28) of Groenewegen is applied in liquid form and is not freestanding. The shell (22) does not receive the encapsulated circuit boards with press fit

Sent Via Facsimile Transmission 571.273.8300

18099 (AT 20958-60)
PATENT

insertion because the wax material (28) fills the shell (22) in liquid form after the circuit boards (24) are located in the shell.

Flanges (38) of Groenewegen are cited in the Office Action as corresponding to the recited flange, but the flanges are provided in a metal plate (26) that is not part of the shell (22), and thus the flanges are not properly characterized as a latch on one of the capsule layer and the housing that engages the other of the housing and the capsule layer as claim 10 recites.

Groenewegen is therefore submitted to neither describe nor suggest the electronic package of claim 10, and accordingly submit that claim 10 is patentable over Groenewegen.

Claims 11-13, 15, and 17 depend from claim 10, and when the recitations of claims 11-13, 15, and 17 are considered in combination with the recitations of claim 10, claims 11-13, 15, and 17 are likewise submitted to be patentable over Groenewegen.

Independent claim 19 recites a method of packaging an electronic assembly subject to a severe operating environment, said method comprising: "encapsulating the electronic assembly to form a sealed immersible electronic module into a freestanding structure;" "fitting the encapsulated electronic assembly into a housing shell;" and "securing the encapsulated module to the housing shell." Claim 19 is submitted to be patentable over Groenewegen for the reasons set forth above. As Groenewegen does not disclose the structure of claims 1 and 10, neither does Groenewegen disclose the method of claim 19.

Claim 19 accordingly submitted is patentable over Groenewegen.

Claims 20 and 22-35 depend from claim 19, and when the recitations of claims 20 and 22-35 are considered in combination with the recitations of claim 19, claims 20 and 22-35 are likewise submitted to be patentable over Groenewegen.

Sent Via Facsimile Transmission 571.273.8300

**18099 (AT 20958-60)
PATENT**

Applicants therefore respectfully request that the rejection of claims 1-3, 7, 8, 10-13, 15, 17, 19, 20 and 22-25 be withdrawn.

The rejection of claims 4, 6, 14, 16 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Groenewegen in view of Little et al. (U.S. Patent No. 6,920,050) is respectfully traversed.

Claims 4, 6, 14, 16 and 21 depend from independent claim 1, submitted to be patentable over Groenewegen for the reasons set forth above. Little et al. is respectfully submitted to add nothing to the teaching of Groenewegen with respect to claim 1, and does not cure the deficiencies of Groenewegen with respect to the invention of claim 1. Little et al. relates to covers for modular racks in electrical systems, and not to sealed immersible electronic modules for use in extreme operating environments. Claim 1 is therefore submitted to be patentable over Groenewegen in view of Little et al., and when the recitations of claims 4, 6, 14, 16 and 21 are considered in combination with the recitations of claim 1, claims 4, 6, 14, 16 and 21 are likewise submitted to be patentable over Groenewegen in view of Little et al.

Additionally, regarding claims 4, 14 and 21, Little et al. is cited for disclosing melt processible rubber, and it is asserted in the Office Action that it would have been obvious to use melt processible rubber in the device of Groenewegen. This assertion is respectfully traversed, as the Groenewegen disclosure teaches that the phase transition properties of the meltable insulator material (28) is essential to proper protection of the device. There is no evidence on the record that melt processible rubber would exhibit the properties described by Groenewegen to render the Groenewegen device operable for its intended purpose. Thus, there is no apparent basis on the record, except perhaps hindsight speculation on the part of the Office, that processible melt rubber would have been a feasible material to use in the Groenewegen device.

Sent Via Facsimile Transmission 571.273.8300

18099 (AT 20958-60)
PATENT

Applicants therefore respectfully request that the rejection of claims 4, 6, 14, 16 and 21 be withdrawn.

The rejection of claims 9 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Groenewegen in view of Ducza et al. (U.S. Patent No. 4,528,932) is respectfully traversed.

Claims 9 and 18 depend from claims 1 and 10, respectively, that are each submitted to be patentable over Groenewegen for the reasons set forth above. Ducza et al. is cited for disclosing a magnetic plate, but Applicants respectfully submit that Ducza et al. adds nothing to the teaching of Groenewegen with respect to the inventions of claims 1 and 10 and that Ducza et al. does not cure the deficiencies of Groenewegen with respect to claims 1 and 10..

Claims 1 and 10 are therefore submitted to be patentable over Groenewegen in view of Ducza et al, and when the recitations of claims 9 and 18 are considered in combination with the respective recitations of claims 1 and 10, claims 9 and 19 are likewise submitted to be patentable over Groenewegen in view of Ducza et al.


Applicants therefore respectfully request that the rejection of claims 9 and 19 be withdrawn.

Sent Via Facsimile Transmission 571.273.8300

18099 (AT 20958-60)
PATENT

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully submitted,



Bruce T. Atkins, Reg. No. 43,476
Armstrong Teasdale, LLP
One Metropolitan Square
Suite 2600
St. Louis, Missouri 63102
314-621-5070